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**TEXAS
ADVANCED ENERGY
BUSINESS ALLIANCE**

PROJECT NO. 52373

**REVIEW OF WHOLESALE ELECTRIC
MARKET DESIGN**

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**PUBLIC UTILITY COMMISSION
OF
TEXAS**

**COMMENTS OF TEXAS ADVANCED ENERGY BUSINESS ALLIANCE IN RESPONSE TO THE
COMMISSION'S QUESTIONS REGARDING DEMAND RESPONSE**

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Executive Summary

TAEBA recommends the following actions to expand demand response (DR), including residential DR in the ERCOT region:

- Leverage the extensive record of barriers to demand response in Project No. 41061 and take advantage of the recommendations provided by stakeholders to develop holistic market solutions that remove barriers and allow multiple DR business models to thrive. This will empower Texas customers to take more control over how much energy they use, when they use it, and ultimately how much they pay in electricity bills.
- Order ERCOT to allow aggregations of distributed energy resources, whether in front of or behind the meter, to participate in wholesale markets as virtual power plants (VPPs).
- Eliminate the rule capping the budget for the Emergency Response Service and include longer lead times to allow additional participation from a wider variety of loads.
- Direct Transmission Distribution System Providers (TDSPs) to alter existing summer-only DR programs to provide year-round reliability and expand programs to target residential DR participation.
- Adopt an interim goal of developing DR programs that total at least 10 percent of system residential peak load. Leverage incentive mechanisms under PUC Subst. R. 25.181 to encourage adoption of DR-capable devices by residential customers who would then participate in demand response programs whether offered by a REP or a third-party aggregator of DR.
- Expand investment in energy efficiency under existing statutory authority, such as but not limited to adopting an annual energy savings goal for utilities' residential and commercial service of one percent by 2025.
- Adjust technical requirements in ERCOT designed mostly by and for "traditional" generation resources and order ERCOT to allow third party aggregators to sell customer demand reduction directly into the market and be paid for this transaction through market settlements.
- Develop telemetry requirements with the end-use customer in mind to ensure that the cost to participate in wholesale markets does not outweigh economic benefits residential DR customers could reap from participating.
- Explore the creation of additional ancillary services that provide enhanced reliability but can accommodate the characteristics of demand response, whether residential or commercial.



About Texas Advanced Energy Business Alliance (TAEBA)

TAEBA includes local and national advanced energy companies seeking to make Texas's energy system secure, clean, reliable, and affordable. Advanced energy technologies include energy efficiency, energy storage, demand response, solar, wind, hydro, nuclear, and electric vehicles (EVs). Used together, these technologies and services will create and maintain a higher performing energy system — one that is reliable and resilient, diverse and cost effective — while also improving the availability and quality of customer facing services. TAEBA's membership also includes advanced energy buyers, which represents the interests of large electricity consumers interested in increasing their purchases of advanced energy to meet business and sustainability goals.

Responses to the Commission's Questions Regarding Demand Response

- 1. Describe existing and potential mechanisms for residential demand response in the ERCOT market.**
 - a. Are consumers being compensated (in cash, credit, rebates, etc.) for their demand response efforts in any existing programs today, and if not, what kind of program would establish the most reliable and responsive residential demand response?**
 - b. Do existing market mechanisms (e.g., financial cost of procuring real time energy in periods of scarcity) provide adequate incentives for residential load serving entities to establish demand response programs? If not, what changes should the Commission consider?**

Demand response falls into one of two categories – economic or reliability-based DR. Economic DR customers respond to price signals as an incentive to curtail consumption. In contrast, reliability-based DR programs are created by grid operators (such as ERCOT and utilities) to provide “command and control” demand reduction during emergency events when reserves are scarce. In the former, customers decide when and whether to participate based on prices while in the latter the grid operator controls and dispatches the resource during the event. Both forms of DR are essential to a reliable, efficient grid and should be further developed within the ERCOT region. ERCOT's *2020 Annual Report of Demand Response in the ERCOT Region* provides a description of both economic and reliability demand response services and programs in ERCOT.¹ Following are recommendations to address some of the barriers to DR, including barriers to residential participation.

In the intervening years since the 2011 winter crisis, the Commission has taken extensive input on DR barriers, such as in Project No. 41061 (Rulemaking Demand Response in the Electric Reliability Council of Texas Market) but has not taken action through rulemaking nor directed ERCOT to resolve the many issues that have been highlighted by DR providers in the past. It is critical that as the Commission considers market reforms that demand-side resources be given the level of attention they deserve, as they are half of the reliability equation (supply=demand.) While many of the barriers raised in Project No. 41061 remain unchanged over the years, what has changed is that the number and diversity of residential demand-side technologies available to participate in demand response are proliferating across Texas. As more customers adopt technologies such as smart thermostats, electric vehicles, customer-sited storage, rooftop solar panels, and other more efficient and DR-capable appliances such heat pumps or hot water heaters, policies must evolve to unlock the full potential of these resources and empower Texas customers to take more control over how much energy they use, when they use it, and ultimately how much they pay in electricity bills.

ERCOT directly administers a reliability-based DR product, Emergency Response Service (ERS), which allows load resources to reduce energy use during times of reserve scarcity. The potential for ERS is limited by the PUCT rule capping the budget for the service, which has the effect of capping participation. We continue to urge the PUCT to remove

¹ ERCOT, Annual Report on Demand Response (December 2020), *available at* <http://www.ercot.com/services/programs/load>



the cap – a “no-regrets” action that will allow ERCOT to expand reliability DR.² Additionally, ERS is limited to resources with 10- and 30-minute response times but longer lead times could allow additional participation from a wider variety of loads and should be offered to encourage additional participation. Similar approaches are in place in other RTOs/ISOs such as NYISO where the emergency DR product has a 24-hour notification, a 21- hour notification, and a 2-hour notification.³

ERCOT TDSPs offer summer-only programs pursuant to PUC Subst. R. 25.181. TDSP programs are available to be deployed through an ERCOT issued instruction during an EEA Level 2 event, but the TDSPs may also deploy these resources for their own reliability purposes.⁴ While these programs are predominantly used by commercial and industrial loads, and only during the summer, they could be extended to provide year-round reliability and expanded to target residential DR participation. These programs also have limited budgets and caps on the amount of DR that can be provided by a single aggregator. As discussed further below, TAEBA recommends adopting an interim goal of developing DR programs that total at least 10 percent of system residential peak load. Existing incentive mechanisms under 25.181 can be used to encourage adoption of DR-capable devices by residential customers who would then participate in DR programs whether offered by a REP or a third-party aggregator of demand response. Consistent with longstanding market principles promoting competition over regulation, the TDSPs themselves, however, should not be engaged in directly recruiting customers as they do not have the business relationship with the customer.

Technical requirements in ERCOT generally have been designed mostly by and for “traditional” generation resources and must be adjusted to remove barriers to residential DR. Stakeholders have long struggled with finding consensus on protocols to allow DR to fully participate in ERCOT energy and ancillary services markets, and this has been a major market limitation. For example, DR providers must be a load serving entity (LSE) or contract with one to be in ERCOT’s Security Constrained Economic Dispatch (SCED), and additionally, some LSEs prevent customers from participating, creating additional barriers to DR participation. TAEBA recommends that the PUCT explicitly order ERCOT to allow third party aggregators to sell customer demand reduction directly into SCED and be paid for this transaction through market settlements.⁵

An additional barrier in ERCOT is the requirement that resources be able to respond to five-minute base points. Many load resources are unable to turn off equipment every five minutes. As stated by one retail provider in Project No. 41061, this time requirement does not allow DR resources “to safely and reliably reduce load for most electric consumer's equipment and processes; most equipment cannot be turned off and on every five minutes as might be required by SCED and consumption generally cannot be moved up and down incrementally at a customer's location with fine granularity DR.”⁶ Adjusting the requirements of SCED to create more flexibility could allow a wider range of DR capabilities to participate in

² Letter to Chairman D’Andrea Regarding Emergency Response Service and Distributed Energy Resources, PUCT Project No. 51812 (March 15, 2021), available at <https://interchange.puc.texas.gov/Search/Filings?ControlNumber=51812>

³ NYISO, Demand Response (May 2021) Presentation at Slide 46, available at <https://www.nyiso.com/documents/20142/3037451/9-Demand-Response.pdf>

⁴ ERCOT, Annual Report on Demand Response (December 2020), available at <http://www.ercot.com/services/programs/load>

⁵ In FERC-jurisdictional markets, FERC Order 745 was adopted in 2011 to require that demand response be compensated at a price equivalent to generation; adopting the same policy here would further simplify settlements, an historical sticking point among stakeholders.

⁶ Comments of MP2 in PUCT at Page 6, Project No. 41061: RULEMAKING DEMAND RESPONSE IN THE ELECTRIC RELIABILITY COUNCIL OF TEXAS (ERCOT) MARKET (2018), available at <https://interchange.puc.texas.gov/search/filings/?UtilityType=A&ControlNumber=41061&ItemMatch=Equal&DocumentType=ALL&SortOrder=Ascending>



the real time market. Additionally, telemetry requirements should be developed with the end-use customer in mind. The cost of telemetry to participate in wholesale markets often outweighs any economic benefits residential DR customers could reap from participating in the market. Less stringent requirements (e.g., accepting AMI data or statistical methods in place of traditional telemetry) are needed to allow residential customers to participate.

As noted previously, the Texas grid is changing rapidly as more customers are making investments in stand-alone systems to provide their own personal resilience and reliability. Following Winter Storm Uri, sales for residential backup systems including on-site batteries, solar, and microgrids have surged.⁷ To ensure improved system utilization and adequate customer compensation for the value that they can deliver to the benefit of the grid and other customers on it, we recommend that the PUCT order ERCOT to allow aggregations of distributed energy resources (DERs), whether in front of or behind the meter, to participate in wholesale markets as virtual power plants (VPPs).⁸ This approach will provide customers with new revenue streams and enable them to contribute to grid needs much more broadly. Recognizing the benefits of competition, the Federal Energy Regulatory Commission (FERC) issued Order No. 2222 directing all grid operators under FERC jurisdiction to create frameworks to allow aggregated DERs, including residential DR, to compete alongside traditional resources. As a result, all RTOs/ISOs except for ERCOT, which is not subject to the order, already have or are currently working with stakeholders to open up markets and opportunities for aggregated DERs. Urgent action from the PUCT is needed to ensure that the ERCOT market does not fall behind and that aggregated residential DR and other customer-sited resources can deliver the full scope of benefits to Texas energy customers. VPPs can provide a range of services at the wholesale level – including energy and ancillary services. Unlike traditional resources, VPPs can absorb excess power, inject energy when needed, and lower overall system costs.⁹

For improved residential DR participation, price signals must be adequately high enough to provide an incentive, must be consistent (occur at many intervals) and predictable enough to justify the expenditure needed to participate in the market. If participation requirements (such as telemetry) are overly burdensome and complicated, this will hinder the ability of residential customers to participate. Additionally, while Retail Energy Providers (REPs) have established relationships with customers and are well suited to provide DR programs for residential customers, business models should not be limited to REP programs, but should also allow for third-party aggregation.¹⁰ Emerging business models such as energy-as-a-service (EaaS) are likely to grow over time as customers agree to allow a competitive service provider to take care of all of the details of risk management to deliver comfort and reliability at an affordable price. Allowing multiple participation options to thrive will maximize competition and consumer benefits.

⁷ Chapa, S., “Gas-Loving Texans Pile Into Home Solar, Batteries After Freeze”, Bloomberg Green (April 2021), *available at* <https://www.bloomberg.com/news/articles/2021-04-28/gas-loving-texans-pile-into-home-solar-batteries-after-freeze>

⁸ DERs include residential DR, but participation by customers should be more expansive to include additional technologies such as on-site solar and storage and electric vehicles. Additionally, ERCOT should be required to allow wholesale market access for DERs, and aggregations of DERs, whether they are located in front of or behind the customer's meter.

⁹ See Advanced Energy Economy, “FERC Order No. 2222 and the Use Cases it Can Unlock” (June 2021), *available at* <https://info.aee.net/ferc-order-no.-2222-and-the-use-cases-it-can-unlock>; Advanced Energy Economy, “Putting Distributed Energy Resources to Work in Wholesale Electricity Markets” (September 2019), *available at* <https://info.aee.net/der-in-wholesale-electricity-markets>.

¹⁰ A demand response aggregator's sole purpose is to aggregate and manage customer-side demand reductions in response to market signals. REPs, which are also capable of providing integrated customer solutions, focus on the delivery of electricity supply, which is a separate service; but there is a possible inherent conflict between reducing consumption and being a provider of electricity supply. Also, REPs have historically not partnered with DR aggregators.



2. What market design elements are required to ensure reliability of residential demand response programs?

a. What command/control and reporting mechanisms need to be in place to ensure residential demand response is committed for the purpose of a current operating plan (COP)?

While TAEBA appreciates the desire for ERCOT or utilities to be able to “command and control” for reliability, we caution against adding even more requirements to existing DR programs. The only way to expand residential DR participation is to reduce customer friction and improve financial incentives for participation. See also Questions 3 and 5.

b. Typically, how many days in advance can residential demand response commit to being available?

Residential demand response can commit as far in advance as generation resources, and one day in advance is typical. If required to commit more than a couple days in advance, committed capacity will likely be lower than the capacity available in real-time, since most current residential demand response is weather sensitive, which would require residential DR providers to offer conservatively to account for weather uncertainty.

3. How should utilities' existing programs, such as those designed pursuant to 16 TAC §25.181, be modified to provide additional reliability benefits?

a. What current impediments or obstacles prevent these programs from reaching their full potential?

As discussed previously, the TDSP load management programs in 16 TAC §25.181 currently are for summer-only, but should be expanded to allow for year-round demand response, including addressing winter peak demand. During the winter, residential devices such as cold weather heat pumps can provide much needed reliability as DR resources. During Winter Storm Uri, TAEBA members partnered with REPs to deploy these resources and provide relief during the weather emergency. TAEBA recommends that the PUCT set an interim goal of developing DR programs that total at least 10 percent of system residential peak load. While this goal is modest given the projected growth of DR, particularly DR-enabled residential devices, we encourage the PUCT to pursue a study of DR potential in ERCOT and modify this goal in line with the study results.

TAEBA also recommends that the Commission take steps under existing statutory authority to deepen the state's commitment to energy efficiency (EE) through 16 TAC §25.181. DR and EE are complementary resources that are essential components of a balanced portfolio of demand side resources and a reliable grid. For example, EE incentives could be used to encourage adoption of heat pumps, which offer greater energy efficiency and customer savings, but can also be used for DR in the ERCOT region. Expanding investment in efficiency, such as adopting an annual energy savings goal for utilities' residential and commercial service of one percent by 2025, would provide meaningful opportunities for individual customers to weatherize their homes, saving on their bills year-round while reducing overall demand on the system. Over the past two decades, Texas has fallen to among the worst states in its commitment to energy efficiency,¹¹ and we can and should do better.

Finally, while not addressed through 16 TAC §25.181, existing demand response programs in municipally-owned utility areas such as Austin Energy and CPS San Antonio could also be improved to reduce customer friction and increase residential participation. The benefit of these programs is that they often provide customers with incentives that are meaningful and drive participation – for example, Austin Energy has \$130 incentive to join the Power Partners demand

¹¹ American Council for an Energy-Efficient Economy, State Energy Efficiency Scorecard: Texas (2020), available at https://www.aceee.org/sites/default/files/pdfs/ACEEE_ScrSht20_Texas.pdf



response program plus a \$25 rebate. However, rules such as requiring a customer to enter an account number to complete an enrollment, while simple in concept, have the effect of decreasing customer enrollment by as much as 20x as most residential customers do not know this information by memory. This makes it substantially harder for our member companies who bring customers into these “Bring Your Own Thermostat” programs to successfully complete enrollment leaving megawatts of customers that have attempted to enroll unable to do so. High friction enrollment requirements that require utility account numbers for customer validation across the board to facilitate customer participation. Customer validation can be accomplished instead through backend validation using customer name and address like the large majority of Bring Your Own Device Programs Across the Country.

4. Outside of the programs contemplated in Question 3, what business models currently exist that provide residential demand response?

a. What impediments or obstacles in the current market design or rules prevent these types of business models from increasing demand response and reliability?

VPPs can provide a range of services at the wholesale level but no process currently exists in Texas to allow these aggregated resources to participate to increase demand response and reliability. See response to Question 1.

An emerging business model is energy-as-a-service (EaaS) which allows customers to manage energy use without having to make any capital investment. EaaS providers offer various energy-related services (including energy management, energy advice, energy asset installation) to help customers reduce their energy bills and ensure local reliability. For EaaS models to flourish, providers must be able to respond in real-time to optimize on behalf of a customer. TAEBA recommends that the PUCT explore rules needed to accommodate emerging business models and enable greater demand-side flexibility.

5. What changes should be made to non-residential load-side products, programs, or what programs should be developed to support reliability in the future?

The most important steps the PUCT can make immediately are to expand energy efficiency, build on existing DR mechanisms such as ERS and TDSP load management, and focus on removing barriers to participation in existing energy and ancillary services markets. We recommend prioritizing market access for aggregations of DER portfolios, including behind-the-meter residential DERs.

Recognizing that creating new ancillary services is a longer term effort, we also note that the PUCT may want to consider adding additional ancillary services that provide additional reliability but can accommodate the characteristics of demand response, whether residential or commercial. For example, PJM includes a Synchronized Reserve Market (SRM) where DR (including residential DR) can directly participate in wholesale ancillary service markets. The short duration of events means that residential customers can participate with little impact on customer convenience or comfort (10-minute response time for a 30-minute event duration). This service can be combined with PJM's emergency demand response program (similar to ERCOT's ERS) and offer an additional revenue opportunity. A similar service in ERCOT could bolster grid reliability while also allowing residential customers to participate in the market.

Similarly, the Commission could consider allowing registered ERS participants to receive an energy-only (with Operating Reserve Demand Curve adders) payment for deploying outside their committed time periods at the request of ERCOT. During Uri, some ERS resources were dispatched only after involuntary load shedding had begun because they were contracted for later time periods, but these resources could potentially have deployed sooner, providing much needed relief prior to their obligated time period. However, successful implementation of this change may require increased coordination with the grid operator.



Respectfully submitted,



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